Louisiana's Uninsured Population:
June 2010 Parish-level Forecast

A Report from the 2009 Louisiana Health Insurance Survey

Stephen Barnes, Assistant Professor-Research
Division of Economic Development
Department of Economics
E.J. Ourso College of Business
Louisiana State University

Kirby Goidel, Professor
Director of Public Policy Research
Reilly Center for Media & Public Affairs
Manship School of Mass Communication
Louisiana State University

Dek Terrell, Freeport-McMoran Professor
Director Division of Economic Development
Department of Economics
E.J. Ourso College of Business
Louisiana State University

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The Louisiana Health Insurance Survey (LHIS) represents the most comprehensive data collection effort in assessing health insurance coverage in Louisiana. The survey has been conducted every two years since 2003 with analysis from the 2009 LHIS providing the most recent estimates of insurance coverage in the state. As summarized in the 2009 LHIS Report, overall uninsured rates at the time of the survey had fallen slightly for both children and adults relative to estimates from the 2007 LHIS. Statewide, approximately 5 percent of children and 20 percent of adults were uninsured. Estimates of the percent of adults and children who are uninsured in each parish at the time of the survey were published in a separate report in February 2010.

The purpose of this report is to present updated uninsured rates for children and adults in each of Louisiana's 64 parishes for June 2010. The basic approach is to build a statistical model to predict the number of uninsured based on socioeconomic characteristics of households using data from the 2007 and 2009 LHIS surveys. We then apply this model to predict the impact of changes in socioeconomic characteristics for each parish during the most recent period, December 2009 to June 2010, to predict the change in uninsured rates for children and adults in each parish.

Three key changes occurred between December 2009 and June 2010. First, the Louisiana unemployment rate increased from 6.8% to 8.3% during this period. Holding other things constant, this deterioration in economic conditions would increase the number of uninsured. Second, the population of Louisiana, particularly in New Orleans, continued to increase. Finally, the Louisiana Department of Health and Hospitals automatically enrolled 10,545 children from SNAP (the Supplemental Nutrition Assistance Program, formerly called Food Stamps) into Medicaid or LaCHIP. This serves to reduce the number of uninsured children, offsetting worsening economic conditions.

The overall trend is one of decreases in the proportion of uninsured children as increases in Medicaid and LaCHIP enrollment more than offset worsening economic conditions. For adults, the opposite is true and worsening economic conditions generally translate into modest increases in the estimated uninsured rate.

Table 1 contains the detailed parish level estimates of the percentage of uninsured children. For an impressive 57 of 64 parishes, the uninsured rate for children declined. This is directly attributable to the new policy of automatically enrolling children from SNAP into Medicaid and LaCHIP. The largest gains occurred in parishes where SNAP enrollment led to the largest gains in coverage measured as a percent of population under 19. For Orleans and St. Bernard Parish, a modest increase in the percent uninsured children was driven primarily by rapid population growth, estimated by combining population growth estimates developed by ESRI with recent Census population count estimates. Thus, these increases may simply be transitory in nature reflecting the fact that some new low-income parents may not have filed the appropriate paperwork to enroll children in Medicaid or LaCHIP.

Table 2 contains similar estimates of the percent uninsured for non-elderly adults. The results show increases in the uninsured rate for 43 of 64 parishes. This reflects the impact of worsening economic conditions.

Table 1: Comparison of June 2010 Forecasts to Past Estimates of Uninsured Children

Parish	Region	Jul-09	Dec-09	Jun-10
Jefferson	1	5.1%	6.2%	5.9%
Orleans	1	7.9%	8.7%	9.0%
Plaquemines	1	7.5%	8.7%	7.4%
St. Bernard	1	5.5%	8.1%	8.7%
Ascension	2	3.4%	3.8%	3.8%
East Baton Rouge	2	4.7%	4.9%	4.8%
East Feliciana	2	5.6%	6.2%	5.6%
Iberville	2	4.0%	4.7%	4.6%
Pointe Coupee	2	3.0%	4.3%	4.3%
West Baton Rouge	2	4.6%	4.9%	5.0%
West Feliciana	2	5.1%	4.5%	4.3%
Assumption	3	3.3%	3.8%	3.6%
Lafourche	3	3.7%	3.9%	3.8%
St. Charles	3	1.8%	2.6%	2.4%
St. James	3	4.5%	4.4%	4.4%
St. John The Baptist	3	5.6%	5.9%	5.7%
St. Mary	3	5.8%	5.0%	4.5%
Terrebonne	3	6.3%	5.9%	5.5%
Acadia	4	3.7%	4.0%	3.8%
Evangeline	4	3.4%	4.0%	3.9%
Iberia	4	4.0%	4.2%	3.9%
Lafayette	4	3.7%	4.1%	3.9%
St. Landry	4	3.6%	4.1%	4.2%
St. Martin	4	5.3%	5.0%	5.0%
Vermilion	4	4.9%	4.6%	4.2%
Allen	5	6.7%	6.8%	6.4%
Beauregard	5	5.3%	5.9%	5.4%
Calcasieu	5	5.0%	5.4%	5.0%
Cameron	5	7.0%	7.7%	7.4%
Jefferson Davis	5	10.5%	9.1%	8.6%
Avoyelles	6	7.9%	7.1%	6.7%
Catahoula	6	5.2%	5.2%	4.9%
Concordia	6	7.9%	6.4%	5.4%
Grant	6	9.0%	7.4%	7.1%
La Salle	6	3.9%	4.2%	3.8%
Rapides	6	5.0%	5.1%	4.8%
Vernon	6	4.0%	5.0%	4.5%
Winn	6	11.5%	8.4%	7.5%

Table 1 (continued): Comparison of June 2010 Forecasts to Past Estimates of Uninsured Children

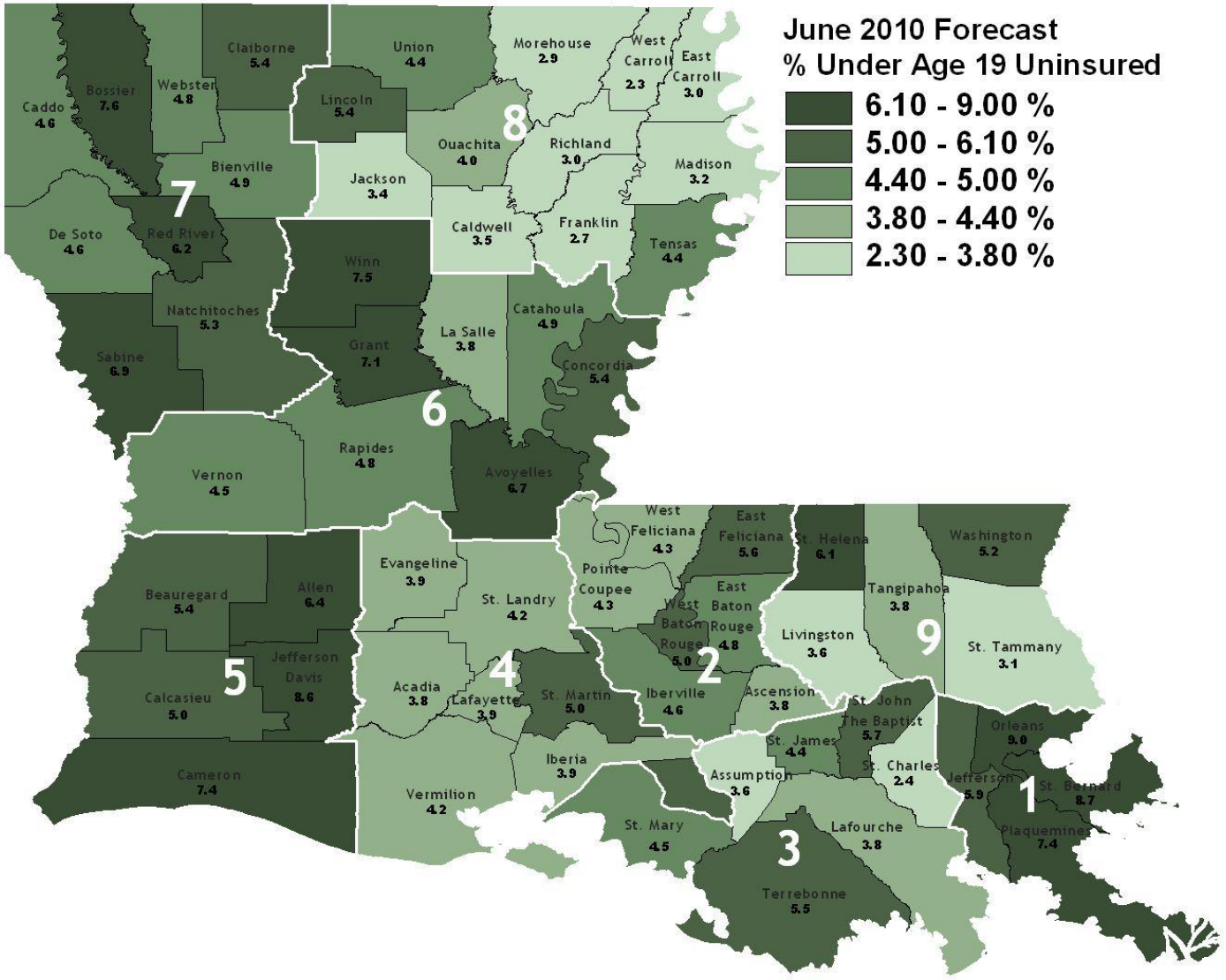
Parish	Region	Jul-09	Dec-09	Jun-10
Bienville	7	5.8%	5.6%	4.9%
Bossier	7	9.3%	8.1%	7.6%
Caddo	7	4.8%	4.9%	4.6%
Claiborne	7	5.8%	5.8%	5.4%
De Soto	7	4.7%	5.1%	4.6%
Natchitoches	7	5.5%	5.7%	5.3%
Red River	7	7.3%	7.1%	6.2%
Sabine	7	8.9%	7.7%	6.9%
Webster	7	6.5%	5.7%	4.8%
Caldwell	8	4.1%	4.0%	3.5%
East Carroll	8	3.3%	3.4%	3.0%
Franklin	8	2.4%	3.1%	2.7%
Jackson	8	3.7%	3.8%	3.4%
Lincoln	8	6.2%	5.4%	5.4%
Madison	8	2.7%	3.5%	3.2%
Morehouse	8	2.6%	3.1%	2.9%
Ouachita	8	4.3%	4.1%	4.0%
Richland	8	2.7%	3.3%	3.0%
Tensas	8	6.7%	5.5%	4.4%
Union	8	5.1%	5.0%	4.4%
West Carroll	8	2.2%	2.4%	2.3%
Livingston	9	3.4%	3.7%	3.6%
St. Helena	9	5.1%	6.3%	6.1%
St. Tammany	9	2.8%	3.2%	3.1%
Tangipahoa	9	3.5%	3.9%	3.8%
Washington	9	5.2%	5.6%	5.2%

Table 2: Comparison of June 2010 Forecasts to Past Estimates of Uninsured Adults

Parish	Region	Jul-09	Dec-09	Jun-10
Jefferson	1	17.1%	17.9%	18.0%
Orleans	1	21.4%	22.5%	22.6%
Plaquemines	1	26.8%	25.8%	25.5%
St. Bernard	1	29.9%	28.2%	28.3%
Ascension	2	16.8%	16.4%	16.8%
East Baton Rouge	2	16.4%	16.9%	17.0%
East Feliciana	2	22.1%	23.1%	23.3%
Iberville	2	18.5%	20.6%	20.7%
Pointe Coupee	2	17.5%	19.5%	19.8%
West Baton Rouge	2	15.3%	16.8%	17.2%
West Feliciana	2	17.5%	17.8%	18.1%
Assumption	3	21.3%	22.2%	22.6%
Lafourche	3	14.3%	15.7%	15.7%
St. Charles	3	13.3%	14.8%	14.9%
St. James	3	24.8%	25.2%	25.9%
St. John The Baptist	3	22.0%	24.3%	24.6%
St. Mary	3	25.5%	25.5%	25.7%
Terrebonne	3	17.8%	18.7%	18.8%
Acadia	4	25.0%	25.1%	25.3%
Evangeline	4	22.6%	24.2%	24.4%
Iberia	4	20.3%	21.6%	21.7%
Lafayette	4	14.9%	15.9%	16.0%
St. Landry	4	20.0%	22.0%	22.4%
St. Martin	4	22.6%	23.5%	23.7%
Vermilion	4	18.7%	19.8%	19.8%
Allen	5	21.4%	23.8%	23.7%
Beauregard	5	18.9%	20.4%	20.3%
Calcasieu	5	19.9%	20.6%	20.7%
Cameron	5	18.7%	20.2%	20.1%
Jefferson Davis	5	21.7%	22.8%	23.1%
Avoyelles	6	23.6%	25.4%	25.5%
Catahoula	6	30.5%	30.3%	30.0%
Concordia	6	29.4%	29.6%	29.8%
Grant	6	26.3%	26.4%	26.6%
La Salle	6	20.6%	21.6%	21.6%
Rapides	6	21.3%	22.3%	22.1%
Vernon	6	14.9%	17.9%	17.9%
Winn	6	28.7%	28.9%	29.1%

Table 2 (continued): Comparison of June 2010 Forecasts to Past Estimates of Uninsured Adults

Parish	Region	Jul-09	Dec-09	Jun-10
Bienville	7	32.6%	31.8%	31.8%
Bossier	7	20.3%	21.0%	20.9%
Caddo	7	25.0%	25.6%	25.6%
Claiborne	7	24.0%	26.7%	26.6%
De Soto	7	26.9%	27.6%	27.6%
Natchitoches	7	24.6%	26.4%	26.5%
Red River	7	34.0%	34.0%	34.2%
Sabine	7	27.6%	28.1%	27.8%
Webster	7	28.2%	28.0%	28.0%
Caldwell	8	32.4%	32.2%	32.2%
East Carroll	8	41.4%	41.2%	41.7%
Franklin	8	31.7%	32.9%	33.3%
Jackson	8	27.8%	28.4%	28.2%
Lincoln	8	30.7%	30.6%	31.2%
Madison	8	35.7%	36.5%	36.8%
Morehouse	8	34.4%	34.9%	35.3%
Ouachita	8	25.6%	26.8%	27.1%
Richland	8	29.8%	31.1%	31.2%
Tensas	8	36.9%	37.6%	38.6%
Union	8	27.8%	29.5%	29.5%
West Carroll	8	35.9%	35.2%	34.9%
Livingston	9	14.6%	16.1%	16.3%
St. Helena	9	32.0%	33.5%	34.2%
St. Tammany	9	10.4%	11.6%	11.7%
Tangipahoa	9	20.8%	22.4%	22.7%
Washington	9	26.7%	28.3%	28.5%


June 2010 Forecast
% Under Age 19 Uninsured
6.10 - 9.00 %
5.00 - 6.10 %
4.40 - 5.00 %
3.80 - 4.40 %
2.30 - 3.80 %
Claiborne 5.4
Union 4.4
Morehouse 2.9
West Carroll 2.3
East Carroll 3.0
Bossier 7.6
Webster 4.8
Caddo 4.6
Lincoln 5.4
8
Ouachita 4.0
Richland 3.0
Madison 3.2
Bienville 4.9
Jackson 3.4
7
Caldwell 3.5
Franklin 2.7
Tensas 4.4
De Soto 4.6
Red River 6.2
Winn 7.5
Catahoula 4.9
Natchitoches 5.3
La Salle 3.8
Grant 7.1
Concordia 5.4
Sabine 6.9
6
Rapides 4.8
Vernon 4.5
Avoyelles 6.7
West Feliciana 4.3
East Feliciana 5.6
St. Helena 6.1
Washington 5.2
Evangeline 3.9
Pointe Coupee 4.3
Tangipahoa 3.8
Beauregard 5.4
Allen 6.4
St. Landry 4.2
East Baton Rouge 4.8
West Baton Rouge 5.0
Livingston 3.6
9
St. Tammany 3.1
Jefferson Davis 8.6
5
4
2
Acadia 3.8
Lafayette 3.9
St. Martin 5.0
Iberville 4.6
Ascension 3.8
St. John The Baptist 5.7
Orleans 9.0
Calcasieu 5.0
St. James 4.4
Iberia 3.9
Assumption 3.6
St. Charles 2.4
Jefferson 5.9
1
St. Bernard 8.7
Cameron 7.4
Vermilion 4.2
St. Mary 4.5
Lafourche 3.8
Plaquemines 7.4
3
Terrebonne 5.5

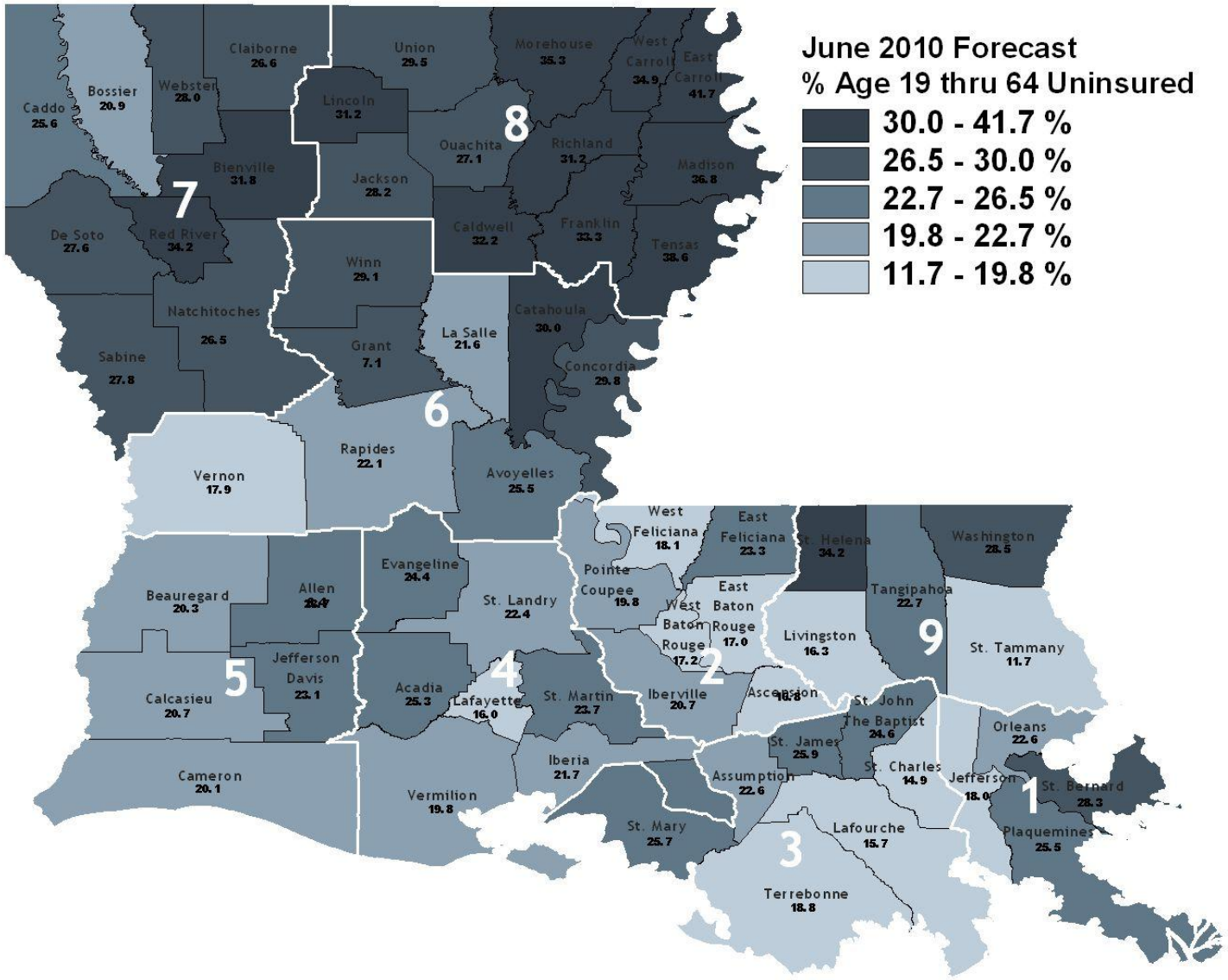

June 2010 Forecast
% Age 19 thru 64 Uninsured
30.0 - 41.7 %
26.5 - 30.0 %
22.7 - 26.5 %
19.8 - 22.7 %
11.7 - 19.8 %
Claiborne 26.6
Union 29.5
Morehouse 35.3
West Carroll 34.9
East Carroll 41.7
Bossier 20.9
Webster 28.0
Caddo 25.6
Lincoln 31.2
8
Ouachita 27.1
Richland 31.2
Madison 36.8
Bienville 31.8
Jackson 28.2
7
Caldwell 32.2
Franklin 33.3
Tensas 38.6
De Soto 27.6
Red River 34.2
Winn 29.1
Catahoula 30.0
Natchitoches 26.5
La Salle 21.6
Grant 7.1
Concordia 29.8
Sabine 27.8
6
Rapides 22.1
Vernon 17.9
Avoyelles 25.5
West Feliciana 18.1
East Feliciana 23.3
St. Helena 34.2
Washington 28.5
Evangeline 24.4
Pointe Coupee 19.8
Tangipahoa 22.7
Beauregard 20.3
Allen 25.4
St. Landry 22.4
East Baton Rouge 17.0
West Baton Rouge 17.2
Livingston 16.3
9
St. Tammany 11.7
Jefferson Davis 23.1
5
4
2
Calcasieu 20.7
Acadia 25.3
Lafayette 16.0
St. Martin 23.7
Iberville 20.7
Ascension 16.8
St. John The Baptist 24.6
Orleans 22.6
St. James 25.9
St. Charles 14.9
Jefferson 18.0
1
St. Bernard 28.3
Cameron 20.1
Iberia 21.7
Assumption 22.6
Vermilion 19.8
St. Mary 25.7
Lafourche 15.7
Plaquemines 25.5
3
Terrebonne 18.8

Table 3: June 2010 Forecast—Estimated Number of Uninsured Individuals

		Children (Under 19)			Adults (19-64)		
Parish	**Region**	**Estimated 2010 Q2 Population**	**June 2010 Percent Uninsured**	**Estimated Number Uninsured**	**Estimated 2010 Q2 Population**	**June 2010 Percent Uninsured**	**Estimated Number Uninsured**
Jefferson	1	106,115	5.9%	6,310	273,815	18.0%	49,205
Orleans	1	86,801	9.0%	7,788	243,597	22.6%	55,152
Plaquemines	1	5,643	7.4%	417	11,988	25.5%	3,060
St. Bernard	1	13,935	8.7%	1,218	30,916	28.3%	8,760
Ascension	2	31,731	3.8%	1,208	66,405	16.8%	11,162
East Baton Rouge	2	118,283	4.8%	5,719	270,274	17.0%	45,875
East Feliciana	2	4,630	5.6%	261	13,460	23.3%	3,139
Iberville	2	7,936	4.6%	367	20,599	20.7%	4,257
Pointe Coupee	2	5,588	4.3%	240	13,191	19.8%	2,618
West Baton Rouge	2	5,976	5.0%	296	14,260	17.2%	2,448
West Feliciana	2	2,642	4.3%	113	10,783	18.1%	1,954
Assumption	3	5,572	3.6%	203	14,134	22.6%	3,194
Lafourche	3	24,456	3.8%	918	57,736	15.7%	9,080
St. Charles	3	14,341	2.4%	351	31,492	14.9%	4,690
St. James	3	5,703	4.4%	249	12,260	25.9%	3,174
St. John The Baptist	3	13,433	5.7%	769	28,377	24.6%	6,984
St. Mary	3	14,359	4.5%	653	29,480	25.7%	7,567
Terrebonne	3	30,381	5.5%	1,664	65,834	18.8%	12,378
Acadia	4	17,297	3.8%	653	35,032	25.3%	8,849
Evangeline	4	10,058	3.9%	389	20,464	24.4%	4,984
Iberia	4	21,664	3.9%	846	43,962	21.7%	9,540
Lafayette	4	56,119	3.9%	2,210	134,363	16.0%	21,438
St. Landry	4	26,655	4.2%	1,125	53,378	22.4%	11,958
St. Martin	4	14,534	5.0%	724	32,080	23.7%	7,595
Vermilion	4	15,413	4.2%	652	33,444	19.8%	6,608

Table 3 (continued): June 2010 Forecast—Estimated Number of Uninsured Individuals

		Children (Under 19)			Adults (19-64)		
Parish	Region	Estimated 2010 Q2 Population	June 2010 Percent Uninsured	Estimated Number Uninsured	Estimated 2010 Q2 Population	June 2010 Percent Uninsured	Estimated Number Uninsured
Allen	5	6,379	6.4%	409	16,257	23.7%	3,858
Beauregard	5	9,542	5.4%	520	21,083	20.3%	4,282
Calcasieu	5	50,469	5.0%	2,534	112,747	20.7%	23,355
Cameron	5	1,554	7.4%	115	4,283	20.1%	859
Jefferson Davis	5	8,898	8.6%	764	17,856	23.1%	4,121
Avoyelles	6	11,324	6.7%	762	25,494	25.5%	6,491
Catahoula	6	2,667	4.9%	130	6,188	30.0%	1,854
Concordia	6	5,067	5.4%	272	10,836	29.8%	3,228
Grant	6	5,495	7.1%	390	12,164	26.6%	3,235
La Salle	6	3,611	3.8%	136	8,093	21.6%	1,746
Rapides	6	36,797	4.8%	1,751	79,415	22.1%	17,562
Vernon	6	12,641	4.5%	565	26,505	17.9%	4,757
Winn	6	3,528	7.5%	266	9,309	29.1%	2,706
Bienville	7	3,524	4.9%	174	8,204	31.8%	2,606
Bossier	7	30,255	7.6%	2,291	68,592	20.9%	14,349
Caddo	7	66,872	4.6%	3,044	152,417	25.6%	39,044
Claiborne	7	3,507	5.4%	188	9,739	26.6%	2,595
De Soto	7	6,910	4.6%	318	15,729	27.6%	4,335
Natchitoches	7	11,006	5.3%	584	23,053	26.5%	6,119
Red River	7	2,498	6.2%	154	5,085	34.2%	1,737
Sabine	7	6,202	6.9%	425	13,348	27.8%	3,714
Webster	7	10,064	4.8%	487	23,234	28.0%	6,508

Table 3 (continued): December 2009 Forecast—Estimated Number of Uninsured Individuals

		Children (Under 19)			Adults (19-64)		
Parish	**Region**	**Estimated 2010 Q2 Population**	**June 2010 Percent Uninsured**	**Estimated Number Uninsured**	**Estimated 2010 Q2 Population**	**June 2010 Percent Uninsured**	**Estimated Number Uninsured**
Caldwell	8	2,522	3.5%	88	6,242	32.2%	2,011
East Carroll	8	2,222	3.0%	66	4,603	41.7%	1,918
Franklin	8	5,132	2.7%	137	11,094	33.3%	3,697
Jackson	8	3,611	3.4%	123	8,799	28.2%	2,485
Lincoln	8	11,960	5.4%	649	26,107	31.2%	8,143
Madison	8	3,206	3.2%	101	6,734	36.8%	2,475
Morehouse	8	7,245	2.9%	212	16,221	35.3%	5,730
Ouachita	8	42,804	4.0%	1,715	90,802	27.1%	24,576
Richland	8	5,511	3.0%	167	11,877	31.2%	3,702
Tensas	8	1,345	4.4%	59	3,084	38.6%	1,190
Union	8	5,462	4.4%	238	12,976	29.5%	3,824
West Carroll	8	2,831	2.3%	65	6,553	34.9%	2,288
Livingston	9	35,785	3.6%	1,289	77,486	16.3%	12,632
St. Helena	9	2,616	6.1%	159	6,368	34.2%	2,175
St. Tammany	9	61,757	3.1%	1,930	139,601	11.7%	16,268
Tangipahoa	9	32,374	3.8%	1,225	72,918	22.7%	16,556
Washington	9	12,162	5.2%	633	26,859	28.5%	7,662

Conclusion

Parish level estimates reveal divergent trends for children and adults. Economic data clearly reveal deteriorating economic conditions in Louisiana between December 2009 and June 2010. For adults, this is the driving force and generally translates into increases in the predicted proportion of uninsured adults. For children, increases in Medicaid and LaCHIP enrollment, particularly due to automatic enrollment for SNAP kids, offset the deteriorating economic conditions and led to reductions in the estimated proportion of uninsured children in most parishes.

Appendix B: Technical Appendix

Two key algorithms were attempted in this update of the parish level model. Both statistical models are described in detail in Rao's (2003) book *Small Area Estimation*. Both were based on a statistical model with individual data modeled as:

$$y_{ij} = x_{ij}^T \beta + v_i + e_{ij},$$

where j =1,…64 is a subscript representing the parishes and i=1,…m is a subscript over individuals.

Before turning to the statistical model, consider first the explanatory variables (x_{ij}) underlying the model. For the children's model, the dependent variable (y_{ij}) is equal to the child's probability of being uninsured. For many children, this is simply zero or one depending on the survey response. But, for children who are eligible for Medicaid, the bias correction model was used to assign a probability of being on Medicaid based on the individual and family characteristics. The explanatory variables are the percent of working age adults in the house who are unemployed, an indicator equal to one if the child lives in a family below 185% of the federal poverty line, household income, an indicator equal to one if the child is black, an indicator equal to one if the child is female, an indicator equal to one if the child is on Medicaid or LaCHIP, three indicator variables for age category, and indicator variables for DHH region. Note that we constrain the coefficients of the 185% of poverty indicator and Medicaid control to sum to zero. For the December 2009 forecast, multiple years of the LHIS were used for the first time in order to better estimate the relationships between these explanatory variables and insurance coverage. Therefore, controls for year of LHIS were added as were interactions between the year controls and labor market characteristics. This assumes that the relationship between demographics and insurance doesn't change over time, but the relationship between employment and insurance does. This additional flexibility relative to the labor market was allowed because of the dramatic changes in the labor market over this period due the effects of hurricane Katrina. In addition, population was estimated using ESRI data during this iteration of the model to allow for more accurate

The adult model is similar in spirit to the child model, but with some notable differences. As in 2007, the adult equation deletes the Medicaid indicator. However, several new controls have been added to allow for more flexible relationships between the explanatory variables and the probability of being uninsured. New variables include squared terms of the unemployment rate and income and interactions of those terms as well as interactions of the income terms and the 185 percent poverty indicator. In addition, an interaction was introduced between the unemployment rate and the female indicator variable because insurance coverage may be less closely tied to employment for women than for men. Finally, interactions between age and gender were added to allow the effects of age to differ by gender.

The first statistical model considered is the basic Hierarchical Bayes model described on pages 237-241 of Rao. The Hierarchical Bayes model has the advantage of providing exact small sample posterior moments. Unfortunately, the Gibbs Sampler failed to converge using this approach even with a very large number of iterations.

The alternative approach used in this study is the classic multivariate Fay-Herriot Model described in detail in Rao's text. We estimate the individual level model using a random effects model and insert parish means to construct parish level models.

Overall results appear as expected. Uninsured rates are higher among poorer individuals and among the unemployed. Given the sample sizes, December 2009 estimates were scaled the parish-level estimates so that the regional totals match those from the full report. This process of scaling the parish estimates to equal regional estimates is called raking the estimates and ensures consistency across reports. For the purposes of forecasting, this study applied an identical statistical approach for both December 2009 and June 2010. Changes in the predicted uninsured rate during that period for each parish were used to create the final estimates.

References

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